

# Diabetes Screening

**Guideline:** Each person should be evaluated for the risk of diabetes according to the recommendations of nationally recognized health organizations.

*The following Guideline is intended to help physicians, nurses, and others involved in clinical decision-making by describing the recommended course of action for Diabetes Screening for individuals served by SCDDSN. As much as possible, the recommendations reflect the strength of evidence and magnitude of net benefit (benefits minus harms) as reported by the U.S. Preventive Services Task Force, the American Diabetes Association, Centers for Disease Control and Prevention, and other nationally recognized health organizations. Decisions about screening for each individual should be based on clinical history, assessment, and other factors unique to the individual.*

## DEFINITIONS:

**Diabetes mellitus:** A group of diseases characterized by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Diabetes can be associated with serious complications and premature death.<sup>1</sup>

**Health screening:** The process of assessing the present health status of an individual through periodic health examinations.

**Individual's record:** A permanent legal document that provides comprehensive information about the individual's health care status.

**Medical progress notes:** The section of the individual's record where primary care prescribers document their findings and provide rationale for treatment plans.

**Prediabetes:** A term used to distinguish people who are at increased risk of developing diabetes. People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT).<sup>1</sup>

**Primary care prescribers:** Physicians, nurse practitioners, and physician's assistants who provide primary care services and are authorized to prescribe medications and treatments for people on their assigned caseloads.

**Risk factor:** Anything that increases a person's chance of getting a disease. However, when a person develops a disease, it is not possible to say with certainty that a particular risk factor was the cause.

**Type 1 diabetes:** A disease caused by a deficiency of insulin. Five to ten percent of diabetics have Type 1 diabetes. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. Type 1 diabetes may account for 5 – 10% of all diagnosed adults. Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile onset diabetes.<sup>1</sup>

**Type 2 diabetes:** A disease that usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. Type 2 diabetes is increasingly being diagnosed in children and adolescents. Type 2 diabetes was previously known as non-insulin dependent diabetes mellitus (NIDDM) or adult onset diabetes.<sup>1</sup>

**RATIONALE:**

1. The purpose of health screening is to identify persons at high risk for specific conditions and to provide early detection and intervention for asymptomatic persons with health conditions.
2. Diabetes can affect many parts of the body and can lead to serious complications such as blindness, kidney damage, lower-limb amputation, and premature death from heart disease and stroke.
3. Treatment for diabetes is most successful when symptoms are detected and treated early.
4. Diabetes is the nation's 6<sup>th</sup> leading cause of death.<sup>2</sup>

**EXPECTED OUTCOMES:**

1. Staff should be aware of the warning signs of diabetes.
  - a. **Type 1 diabetes:** The symptoms usually develop over a short period of time and include:<sup>3</sup>
    - increased thirst and urination
    - constant hunger
    - weight loss
    - blurred vision
    - extreme fatigueIf not diagnosed and treated with insulin, a person with type 1 diabetes can lapse into a life threatening diabetic coma, known as diabetic ketoacidosis.<sup>3</sup>
  - b. **Type 2 diabetes:** The symptoms develop gradually and their onset is not as sudden as type 1 diabetes. Symptoms of type 2 diabetes are no less important than symptoms of type 1 diabetes and should receive prompt medical attention. Symptoms may include:<sup>3</sup>
    - fatigue
    - nausea
    - frequent urination
    - unusual thirst
    - weight loss
    - blurred vision
    - frequent infections, and
    - slow healing of wounds or sores.Some people have no symptoms.<sup>3</sup>
2. Changes in a person's appearance, activity-level, or behavior that may suggest any early signs or symptoms of diabetes should be reported promptly to health personnel.  
The nurse should document reported information and observations in the nursing notes.
3. Prompt and thorough follow-up should be completed and documented when signs and/or symptoms of diabetes are detected.
  - a. The medical plan of care should be documented in the medical progress notes.
  - b. Nursing strategies, interventions, and follow-up should be documented in the nursing notes.

## Screening Guidelines for Diabetes

### Type 1 diabetes<sup>3</sup>

1. Most cases of type 1 diabetes are detected soon after onset of symptoms.
2. Widespread clinical testing of asymptomatic individuals is not recommended to identify people at risk.

### Type 2 diabetes

1. Screening is recommended for type 2 diabetes in adults with hypertension or hyperlipidemia.<sup>4</sup>
2. The decision to screen individual asymptomatic adults is a matter of clinical judgment. Screening as a routine part of health care may be appropriate if the person has one or more of the risk factors listed below. People at increased risk for cardiovascular disease may benefit most from screening for type 2 diabetes.<sup>4</sup>
3. Screening of high risk individuals should be considered at least every 5 years.
4. The preferred screening test is the *fasting* plasma glucose (FPG) test.<sup>5,6</sup>
  - a. *Fasting* is considered to be no consumption of food or beverage for at least 8 hours prior to the test.
  - b. A FPG level less than 100 mg/dl (5.6 mmol/l) = normal fasting glucose;
  - c. A FPG level 100 – 125 mg.dl (5.6-6.9 mmol/l) = IFG (impaired fasting glucose)
  - d. A FGP level greater than 125 mg/dL = a provisional diagnosis of diabetes and an indicator that further evaluation is needed.
5. In certain clinical circumstances, the oral glucose tolerance test may be used. A confirmed glucose value of greater than or equal to 200 mg/dL is an indicator that further evaluation is needed.<sup>6</sup>

## Risk Factors for Diabetes<sup>1</sup>

### Type 1 diabetes

The following factors increase the risk of people having type 1 diabetes:

1. Autoimmune factors
2. Genetic factors
3. Environmental factors

### Type 2 diabetes

The following factors increase the risk of people having type 2 diabetes:

1. Older age
2. Obesity
3. Family history of diabetes
4. Prior history of gestational diabetes
5. Impaired glucose metabolism
6. Physical inactivity
7. High risk groups based on race/ethnicity:
  - a. African Americans
  - b. Hispanic/Latino Americans
  - c. American Indians
  - d. Some Asian Americans and Native Hawaiians or Other Pacific Islanders

## Complications of Diabetes<sup>1</sup>

1. **Heart disease and stroke**
  - Heart disease is the leading cause of diabetes-related deaths.
  - Adults with diabetes have heart disease death rates 2-4 times higher than adults without diabetes.
  - The risk for stroke is 2-4 times higher in people with diabetes.
  - About 65% of deaths among people with diabetes are due to heart disease and stroke.
2. **High blood pressure**
  - About 73% of adults with diabetes have blood pressure greater than or equal to 130/80 or use prescription medication for higher pressure.
3. **Blindness**
  - Diabetes is the leading cause of new cases of blindness in adults 20 to 74 years old.
  - Diabetic retinopathy causes between 12,000 and 24,000 new cases of blindness each year.
4. **Kidney disease**
  - Diabetes is the leading cause of end-stage renal disease, accounting for about 44% of new cases.
5. **Nervous system disease**
  - About 60% to 70% of people with diabetes have mild to severe forms of nervous system damage which often includes impaired sensation or pain in the feet or hands, slowed digestion of food in the stomach, carpal tunnel syndrome, and other nerve problems.
  - Severe forms of diabetic nerve disease are a major contributing factor of lower extremity amputations.
6. **Amputations**
  - More than 60% of nontraumatic lower limb amputations in the United States occur among people with diabetes.
7. **Dental disease**
  - Periodontal disease is more common among people with diabetes.
  - Almost one third of people with diabetes have severe periodontal disease.
8. **Complications of pregnancy**
  - Poorly controlled diabetes before conception and during the first trimester can cause major birth defects in 5% to 10% of pregnancies and spontaneous abortions in 15% to 20 % of pregnancies.
9. **Other complications**
  - People with diabetes are more susceptible to other illnesses such as pneumonia and influenza than people who do not have diabetes.
  - Diabetes can cause life-threatening events such as diabetic ketoacidosis and hyperosmolar nonketotic coma.

## REFERENCES

1. Centers for Disease Control and Prevention. (2004). National diabetes fact sheet: General information and national estimates in the United States, 2003. Rev ed. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved May 25, 2005 from the World Wide Web: <http://www.cdc.gov/diabetes/pubs/general.htm#what>.
2. Coffey, R.M., Matthews, T.L., McDermott, K. (2004, September). Diabetes Care Quality Improvement: A Resource Guide for State Action. (Prepared by the Medstat Group, Inc and The Council of State Governments under Contract No 290-00-0004). Rockville, MD: Agency for Healthcare Research and Quality, Department of Health and Human Services: AHRQ Pub. No. 04-0072.
3. National Diabetes Information Clearinghouse. (2005, January). Diabetes Overview. NIH Publication No. 05-3873, January 2005. Retrieved May 25, 2005 from the World Wide Web: <http://www.diabetes.niddk.nih.gov/dm/pubs/overview/index.htm>
4. U.S. Preventive Services Task Force. (2003, February) Screening for Diabeted Mellitus, Adult type 2. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved June 29, 2005 from the World Wide Web: <http://www.ahrq.gov/clinic/uspstf/uspdiab.htm>
5. American Diabetes Association. (2004, Jan 27). Standards of Medical Care in Diabetes. Diabetes Care, (Suppl 1):S15-35. Retrieved June 29, 2005 from World Wide Web: <http://care.diabetesjournals.org>
6. American Diabetes Association. (2005). Diagnosis and Classification of Diabetes Mellitus. Diabetes Care, 28:S37-S42. Retrieved June 29, 2005 from World Wide Web: [http://care.diabetesjournals.org/cgi/content/full/28/suppl\\_1/s37](http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s37)